Modified PTO/SB/33 (10-05)

PRE-APPEAL BRIEF REQUEST FOR REVIEW	Docket Number Q84298	
Mail Stop AF Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Application Number 10/517,656	Filed December 13, 2004
	First Named Inventor Hitoshi KIDOKORO	
	Art Unit 1725	Examiner Heinrich, Samuel M.

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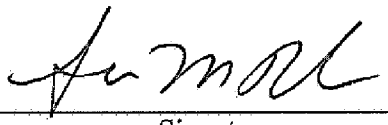
Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal

The review is requested for the reasons(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

☑ I am an attorney or agent of record.
Registration number 48,294



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March 19, 2007 (since March 17, 2007 fell on a Saturday)
Date

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Hitoshi KIDOKORO, et al.

Docket No: Q84298

Appln. No.: 10/517,656

Group Art Unit: 1725

Confirmation No.: 1603

Examiner: Heinrich, Samuel M.

Filed: December 13, 2004

For: LASER MACHINING APPARATUS AND CONTROL METHOD FOR THE APPARATUS

PRE-APPEAL BRIEF REQUEST FOR REVIEW

MAIL STOP AF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the new Pre-Appeal Brief Conference Pilot Program, and further to the Examiner's Final Office Action dated October 17, 2006, Applicant files this Pre-Appeal Brief Request for Review. This Request is also accompanied by the filing of a Notice of Appeal.

Applicant turns now to the rejections at issue:

As of the final rejection, dated October 17, 2006, claims 1, 3 and 5 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over JP 57186378 to Yoshihide ("Yoshihide") in view of JP 405022941, JP 358141689 and JP 407111427, and claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshihide, JP 405022941, JP 358141689, JP 407111427 and JP 403011904.

A. Claims 1 and 5

Claim 1 recites a thinning-out means, into which the command pulse sets are inputted, for switching a number of pulses thinned out from the command pulse sets, according to a pulse width setting of the control parameters. Applicant submits that a non-limiting embodiment of such features is set forth on at least pages 12-15 of the present Application. Analogous features can be found in the recitations of claim 5.

In regard to claims 1 and 5, Applicant previously argued that in Yoshihide, in order to obtain a pulse train whose power is proportional to the laser output power, the pulse train supplied to the electric power source thereof is densely or rarely controlled using the discharging electric power of each pulse being constant (i.e., the number of the command pulse trains per unit time is set in proportion to desired laser output power) (August 3, 2006 Amendment). As represented by Equation 1 of Yoshihide, the number (Y) of pulse trains per unit time is obtained by commanding a ratio (X/Xmax) against the maximum value (Xmax). Accordingly, only the number of pulse trains is set based on the strength of laser output power (i.e., if the strength of the laser output power is defined, the number of the command pulse trains per unit time is uniquely set).

On the other hand, Applicant noted that in the claimed configuration of the thinning-out means, a number of pulse trains are set in response to the desired output laser pulse width. Also, in the present invention, the command pulse trains are thinned out when the output pulse width is set wide (= the laser output duration is set long). That is, the present invention is configured such that the output laser pulse width is set wide (or can be made longer) without the command pulse number being increased. According to this configuration, an effect can be obtained that the range of the laser output power pulse

width can be widely extended without increasing the capacity of an electric power source. In other words, by thinning out the command pulses (without increasing the number), the laser pulse width is widened and the laser-output peak power is suppressed. Therefore, the laser pulse width can be controlled without the laser output power exceeding the laser durability of the mirrors that configure the laser resonator. On the other hand, if the laser pulse width is widened, without thinning out the command pulses (by increasing the number), the laser output power increases, and as a result, the power may exceed the laser durability of the mirrors (see page 18, line 17 to page 19, line 8).

In the October 17, 2006 Final Office Action, the Examiner cites to the three new references set forth above to cure the deficient teachings of Yoshihide. The Examiner maintains that the references teach that it is well known to pulse modulate in response to pulse width and to control motor and volume using pulse trains controlled in response to pulse width (pg. 3 of Final Office Action). Further, the Examiner maintains,

> "The use of a power pulse train with a higher frequency than the laser output response frequency is the same as setting the switching cycle to be faster than the time constant of discharge power and laser output, and controlling the overall width of this thinned or proportioned pulse train would have been obvious at the time applicant's invention was made to a person having ordinary skill in the art in order to obtain output control having no dead band." (pg. 3 of Final Office Action)

In regard to the Examiner's comments regarding motivation, Yoshihide already discloses that its invention does not generate a dead band (English Abstract). Therefore, Applicant submits that the result of having output control with no dead band does not serve as proper motivation to combine the references.

Furthermore, JP 405022941 discloses a pulse train that is made to have as its amplitude, a voltage proportional to a converter voltage. Using a low-pass filter, the reference current is obtained. In JP 358141689, a pulse width is modulated in response to a targeted speed. Finally, in JP 407111427, the number of command pulses is thinned out for controlling an output amplitude value. Applicant submits that such disclosure fails to teach or suggest the claimed operation of a number of command pulses being thinned out based on setting the output pulse width, as recited in claims 1 and 5. Accordingly, JP 405022941, JP 358141689 and JP 407111427 fail to cure the deficient teachings of Yoshihide, and thus, Applicant submits that controlling the overall width of the laser pulse by thinning or proportioning a control pulse train would not have been obvious.

In the attachment to the March 1, 2007 Advisory Action, the Examiner responds to the arguments presented above by stating that JP 57186378 (Yoshihide) describes pulse train control and the secondary references provide further description of well known pulse train control features. The Examiner therefore maintains that the use of such control features, by thinning out or proportioning the pulse train, would have been obvious. For at least the reasons set forth above, however, Applicant submits that the references fail to teach or suggest the claimed invention.

At least based on the foregoing, Applicant submits that claims 1 and 5 are patentable over the cited references.

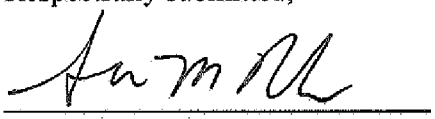
B. Claim 3

Since claim 3 is dependent upon claim 1, Applicant submits that such claim is patentable at least by virtue of its dependency.

C. Claim 6

Since claim 6 is dependent upon claim 1, and JP 403011904 fails to cure the deficient teachings of Yoshihide, JP 405022941, JP 358141689 and JP 407111427, in regard to claim 1, Applicant submits that claim 6 is patentable at least by virtue of its dependency.

Respectfully submitted,



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